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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
BUR90000146US1

Re Application Of: Ditlow, et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/943,829	August 31, 2001	Kenneth Tang	21254	2195	2812

Invention: METHOD AND APPARATUS TO MANAGE MULTI-COMPUTER SUPPLY

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on  
July 19, 2005

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Appellants' Brief on Appeal  
S/N: 09/943,829

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

Ditlow, et al.

**Serial No.: 09/943,829**

Group Art Unit: 2195

Filed: August 31, 2001

Examiner: Tang, K.

**For: METHOD AND APPARATUS TO MANAGE MULTI-COMPUTER SUPPLY**

Commissioner of Patents  
Alexandria, VA 22313-1450

**APPELLANTS' BRIEF ON APPEAL**

Sir:

Appellants respectfully appeal the rejection of claims 1-20 in the Office Action dated April 19, 2005. A Notice of Appeal was timely filed on July 19, 2005.

**I. REAL PARTY IN INTEREST**

The real party in interest is International Business Machines Corporation, assignee of 100% interest of the above-referenced patent application.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to Appellants, Appellants' legal representative or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

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### **III. STATUS OF CLAIMS**

Claims 1-20, all of the claims presently pending in the application, are understood as standing rejected on prior art grounds, although the rejection currently of record fails to account for claim 20.

Claims 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, and 19 stand rejected under 35 USC §103(a) as unpatentable over US Patent 6,370,560 to Robertazzi et al., further in view of US Patent 6,105,053 to Kimmel et al. Claims 3, 9, and 15 stand rejected under 35 USC §103(a) as unpatentable over Robertazzi, further in view of Kimmel, and further in view of US Patent 6,400,996 to Hoffberg et al. Claims 6, 12, and 18 stand rejected under 35 USC §103(a) as unpatentable over Robertazzi, further in view of Kimmel, and further in view of US Patent Application Publication US 2001/0054094 A1 to Hirata et al.

With the understanding that claim 20 is intended as included in the prior art rejection, all claims are being appealed.

### **IV. STATUS OF AMENDMENTS**

An Amendment Under 37 CFR §1.116 was filed on June 20, 2005, although no claim amendments were included therein. Therefore, the version of the claims in the Appendix reflects the claim amendments of the Amendment Under 37 CFR §1.111 filed on January 4, 2005.

In the Advisory Action dated July 21, 2005, the Examiner indicated that the arguments in the Amendment Under 37 CFR §1.116 were not persuasive and that the rejections based on Robertazzi were maintained as based on the Examiner's "... broadest reasonable interpretation consistent with the specification."

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

Appellants' invention, as disclosed and claimed in independent claim 1, is directed to a computer-implemented method for determining a listing of hosts on a network to perform a parallel application (lines 15-16 of page 1, lines 16-19 of page 4, lines 1-3 of page 6, Figure 1), including determining a listing of all possible hosts on the network for performing the parallel application (lines 16-18 of page 1, line 19 of page 6 through line 1

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of page 7). For each of the possible hosts (line 2 of page 18) a current capacity and a current utilization is determined and a difference between the current capacity and the current utilization is calculated (lines 2-4 of page 7, line 12 of page 13, line 3 of page 18 through line 9 of page 19, equation [4] in Figure 7). A listing of hosts is selected from the listing of all possible hosts, based on sorting the calculated differences (lines 18-19 of page 1, lines 4-5 of page 7, lines 6-21 of page 24, Equation [6a] of Figure 7).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Appellant presents the following issues for review by the Board of Patent Appeals and Interferences:

### **ISSUE 1: THE REJECTION BASED ON US PATENT 6,370,560 TO ROBERTAZZI**

Whether the rejection under 35 U.S.C. § 103(a) can be maintained for any of the claims, in view that the result obtained by applying the plain meaning of the description in Robertazzi results in the opposite result obtained by applying the plain meaning of the claim language used to define the present invention;

### **ISSUE 2: THE MODIFICATION OF PRIMARY REFERENCE ROBERTAZZI BY SECONDARY REFERENCE KIMMEL**

Whether the combination of Robertazzi and Kimmel is proper under 35 U.S.C. § 103(a), when the two references address two clearly distinguishable environments; and

### **ISSUE 3: THE REJECTION FOR CLAIMS 6, 12, AND 18, BASED ON ROBERTAZZI AS MODIFIED BY US PATENT PUBLICATION 2001/0054094 TO HIRATA ET AL**

Whether the rejection under 35 U.S.C. § 103(a) can be maintained, in view of the fact that normalization serves no purpose in the method of Robertazzi and the Examiner has not even explained how it could possibly even be implemented therein, since there appears to be no normalization possible in Robertazzi's method, absent some clarification by the Examiner.

## VII. ARGUMENTS

### ISSUE #1: THE REJECTIONS AS BASED ON ROBERTAZZI

Appellants believe that the Robertazzi reference is clearly patentably distinguishable from the present invention, when viewed from the perspective of one having ordinary skill in the art, since the present invention requires very clearly in its broadest definition (e.g., the independent claims) that the selection criterion is based upon calculation of the difference between current capacity and current utilization. In contrast, the method of Robertazzi is clearly based upon a selection of the cheapest processor platforms, as clearly described at line 66 of column 6 through line 2 of column 7.

The Examiner does not agree, alleging that the rejection currently of record correctly reflects the broadest reasonable interpretation.

#### A. THE EXAMINER'S POSITION ON THE REJECTIONS BASED ON ROBERTAZZI

The Examiner alleges that claims 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, and 19 are rendered obvious by Robertazzi, as modified by Kimmel.

In the Office Action dated October 4, 2004, containing the initial rejection, the Examiner alleges that the second claim limitation (e.g., "... *determining for each of said possible host a current capacity and a current utilization ...*") and the third claim limitation (e.g., "... *calculating, for each of said possible hosts, a difference between said current capacity and said current utilization...*"), is satisfied in Robertazzi by the description at lines 55-66 of column 2, at lines 1-12 of column 3, and at lines 20-33 of column 6.

Relative to the fourth claim limitation (e.g., "... *selecting from said listing of all possible hosts a listing of hosts based on sorting said calculated differences.*"), the Examiner alleges that this description is satisfied in Robertazzi at lines 21-33 of column 1 and at lines 20-33 of column 6.

Appellants note that, in the rejection, the Examiner actually adds wording that is not present in the language of the independent claims, presumably for purpose of clarification of the Examiner's interpretation of the claim language.

In paragraph 24 on page 7 of the Final Office Action, dated April 19, 2005, the further explains: *"The current capacity is the cost. The current utilization is how many segments of the divisible load. (sic) The difference between the current capacity and the current utilization is merely the segment portion of the load that is available to process (sic)(see Abstract and col. 6, lines 15-36).*

Thus, it appears that the Examiner interprets:

- the claim terminology "current capacity" to somehow mean "cost";
- the claim terminology "current utilization" to somehow mean "the number of segments of divisible load", presumably intended to mean the number of segments of divisible loads in the current job; and
- the claim terminology "difference between said current capacity and said current utilization" to somehow mean "the segment portion of the load that is available to process", presumably intended to refer to the one segment portion currently assigned or to be assigned for execution or, possibly, intended to refer to each segment assigned to be executed on each available machine.

#### B. APPELLANT'S POSITION ON THE REJECTIONS BASED ON ROBERTAZZI

**First, the Examiner's position is flawed as a matter of law.**

Appellants submit that the responsibility of the Examiner, as described in MPEP § 2111, to provide the broadest reasonable interpretation is not a poetic license. As clearly stated in that same section, the broadest reasonable interpretation must be "consistent with the specification." Moreover, as clearly described in MPEP § 2111.01, the interpretation is further constrained by the "plain meaning" of the claim language, as would be interpreted by one having ordinary skill in the art.

Appellants submit that one of ordinary skill in the art would not interpret "current capacity" of a machine as in any way equivalent to "cost", that no dictionary provides an alternative definition that "capacity" can mean "cost", and that the specification clearly defines "capacity" (e.g., at lines 18-19 on page 18) as "... the physical configuration of a

computer and is typically constant over long periods of time.” As explained in the table at line 11 on page 18, the dimensions and units of each machine component are well understood in the art. There is no reference to “cost” of these components as being a factor in “capacity.”

Beginning at line 3 on page 19, Appellants describe “utilization” as a vector that describes the current usage of these properties of the machines. This description clearly contradicts the Examiner’s interpretation that utilization is somehow related to the number of segments in the job to be executed.

Appellants further submit that the equation (14) at line 10 on page 19 clearly demonstrates that the “difference between said current capacity and said current utilization” cannot be construed in any manner except the straightforward interpretation of the current availability of each machine to participate in the allocations of the current job execution.

Appellants surmise that the Examiner intends to consider that “cost”, in some fact patterns, could be interpreted in a form of an abstract concept, and that this abstract concept can somehow then be considered as somehow corresponding to an abstract concept for capacity. However, Appellants submit that, just as abstract ideas are precluded by 35 USC §101 from being statutory subject matter, the USPTO is likewise constrained from deriving rejections based on abstractions of terminology that has a clear meaning to one having ordinary skill in the art.

**Secondly, the Examiner’s position is flawed as a matter of fact.**

Appellants submits that the description in Robertazzi at lines 55-66 of column 2, at lines 1-12 of column 3, and at lines 20-33 of column 6, upon which the Examiner relies for satisfying the claim limitations involving current capacity and current utilization of each machine and subtracting these two, clearly do not satisfy the plain meaning of the claim language. The description at lines 32-49 of column 2 clearly defines the purpose of Robertazzi as attempting to reduce the cost, as measured in common economical and accounting concepts, of a parallel execution on machines. The description at line 14 of column 4 through line 12 of column 12 confirms this basic concept in Robertazzi that

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sorting of available machines is based on each machine's operating cost, not on having calculated the difference between current capacity and current utilization.

Appellants further submit that the description at lines 28-31 of column 4 for the 486 platform and the description at lines 31-33 for the mini-computer, along with the subsequent description in the following three paragraphs, along with the description in the paragraph beginning at line 66 of column 6 and the description in lines 34-60 of column 8, clearly state that the only criterion for sorting the available machines is that of having the cheapest machines selected in order.

Contrary to the Examiner's allegation, there is no suggestion whatsoever that the selection method in Robertazzi is mysteriously based on the "difference between said current capacity and said current utilization", as this terminology is defined in the specification and as would be readily understood by one having ordinary skill in the art.

Relative to the rejection for claim 4, 10, 13, 16, Applicants submit that lines 30-33 of column 1 clearly disputes the Examiner's allegation that it is an inherent that an operating system be involved. That is, this description clearly states that the indivisible load or task is "... one that cannot be divided into two or more smaller fragments to be distributed among multiple processors but requires that the load be processed by a single processor." Applicants submit that this description does not in any way require that an operating system inherently be involved to give "... the instructions for task management and parallel processing", as characterized by the Examiner.

Moreover, Applicants submit that the plain meaning of the claim language requires that it is the selected listing of hosts be provided to an operating system.

Relative to the rejection for claims 3, 9, and 15, Applicants submit that the flowcharts in Figures 2A-2C clearly reflect that the allocation of the load segments is done as a preliminary step to execution, not as a real-time allocation as the processing is being executed.

Therefore, Appellants request that the rejection based on Robertazzi be withdrawn.



ISSUE #2: THE MODIFICATION OF PRIMARY REFERENCE ROBERTAZZI  
BY SECONDARY REFERENCE KIMMEL

Appellants believe that it is improper to modify Robertazzi by Kimmel, given that the two references are related to two different scopes of “network” or “system”.

The Examiner clearly does not agree.

C. THE EXAMINER'S POSITION ON THE MODIFICATION OF PRIMARY  
REFERENCE ROBERTAZZI

In the rejection currently of record, the Examiner alleges that the modification of Robertazzi by Kimmel would be proper, since Kimmel presents a “*multiprocessing system having a listing in the form of a hierarchical tree structure that represents all the job processors in the network that can be used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of having the listing of all possible hosts on the network for performing the parallel applications to the existing system because this increases the efficiency level of affinity and this helps to maintain balanced processor and memory loads (see Abstract).*”

Thus, it appears that the Examiner considers that Robertazzi and Kimmel both represent equivalent “systems”, so that components of one reference would be freely intermingled simply by motivation that one would thereby achieve the benefit of having made the modification.

D. APPELLANT'S POSITION ON THE MODIFICATION OF PRIMARY  
REFERENCE ROBERTAZZI

**First, the Examiner's position is flawed as a matter of law.**

Appellants submit that, as described in MPEP § 2141.01(a), the criterion for combining references for evaluation under 35 USC §103(a) is that “... *the references must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned.*”

As pointed out later in that section under the subsection “**ANALOGY IN THE ELECTRICAL ARTS**”, even “*Reference to a SIMM for an industrial controller was not necessarily in the same field of endeavor as the claimed subject matter merely because it related to memories. Reference was not found to be in a different field of endeavor because it involved memory circuits in which modules of varying sizes may be added or replaced, whereas the claimed invention involved compact modular memories. Furthermore, since memory modules of the claims at issue were intended for personal computers and used dynamic random-access-memories whereas reference SIMM was developed for use in large industrial machine controllers and only taught the use of static random-access-memories or read-only-memories, the finding that the reference was nonanalogous was supported by substantial evidence.*”

Second, as clearly described at MPEP §2143.01: “*The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.*” (emphasis in MPEP itself)

Appellants submit that the rejection currently of record violates both of the above-recited lines from the MPEP. First, since the problem and the environment addressed are different in Robertazzi and Kimmel. Second, the rejection currently of record makes no attempt to justify that the prior art itself suggest the desirability. The Examiner merely makes conclusory statements about changes that could be made.

**Secondly, the Examiner's position is flawed as a matter of fact.**

The secondary reference is directed to a non-uniform memory access (NUMA) multiprocessor system (see Abstract). Appellants submit that, to one having ordinary skill in the art, a NUMA multiprocessor system is not a network, as described in Robertazzi. Rather, as well known in the art and confirmed by the description at lines 31-38 of column 4 of Kimmel, a NUMA system is one in which various memories are interconnected. Typically, NUMA refers to a single machine architecture, and Kimmel itself describes NUMA as an architecture controlled by a single operating system.

Appellants submit that the environment described in the secondary reference Kimmel is entirely different from the network described in primary reference Robertazzi, Docket BUR920000146US1

so that these two references cannot be considered as simply having components or concepts that can be freely intermingled in the manner done in the rejection currently of record.

Second, relative to the motivation to modify Robertazzi, it is noted that the rejection currently of record makes no attempt to justify that the prior art itself makes any suggestion for the modification. Rather, the Examiner merely recites a purported benefit that presumably would be achieved, if the modification were to be made. Appellants submit that such cursory analysis is clearly improper hindsight.

ISSUE #3: THE REJECTION FOR CLAIMS 6, 12, AND 18, BASED ON  
ROBERTAZZI AS MODIFIED BY US PATENT PUBLICATION 2001/0054094 TO  
HIRATA ET AL

Appellants believe that it is improper to modify Robertazzi to incorporated “normalization”, as taught by Hirata, given that there appears to be nothing in Robertazzi that can be reasonably “normalized”, at least without some clarification by the Examiner.

The Examiner clearly does not agree.

D. THE EXAMINER’S POSITION ON THE MODIFICATION BY HIRATA

In the rejection currently of record, the Examiner concedes that Robertazzi fails to teach or suggest normalization but alleges that it “... *would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of normalizing to gain the advantage described above.*”

Thus, it appears that the Examiner considers that some benefit would result from some form of normalization of Robertazzi, even though the rejection currently of record fails to specify what “advantage” is considered would be gained by such normalization.

E. APPELLANT’S POSITION ON THE MODIFICATION BY HIRATA

**First, the Examiner’s position is flawed as a matter of law.**

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Again, Appellants submit that, as clearly described at MPEP §2143.01: "*The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.*" (emphasis in MPEP itself)

**Secondly, the Examiner's position is flawed as a matter of fact.**

Again, Appellants submit that the Examiner merely recites a purported benefit that presumably would be achieved, if the modification were to be made. Appellants submit that such cursory analysis is clearly improper hindsight.

Moreover, Appellants submit that the rejection currently of record fails to even identify which variable in the primary reference would receive a benefit if it were to be normalized.

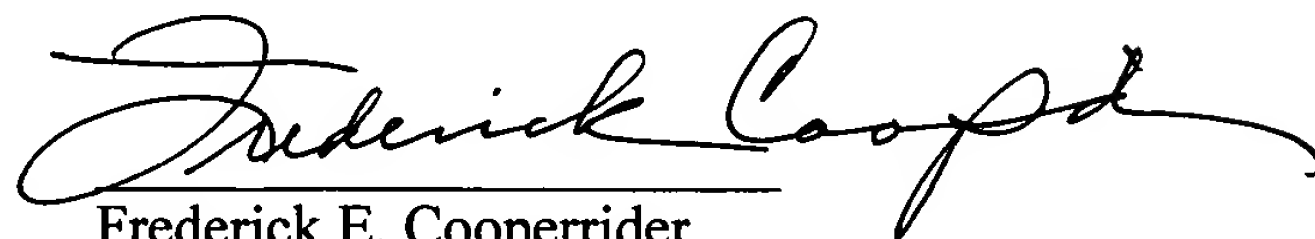
**CONCLUSION**

In view of the foregoing, Appellants submit that claims 1-20, all the claims presently pending in the application, are clearly enabled and patentably distinct from the prior art of record and in condition for allowance. Thus, the Board is respectfully requested to remove all rejections of claims 1-20.

Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Assignee's Deposit Account number 09-0456.

Respectfully submitted,

Dated: 9/19/05

  
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### **VIII. CLAIMS APPENDIX**

Claims, as reflected upon entry of the Amendment Under 37 CFR §1.116 filed on June 20, 2005:

1. (Previously presented) A computer-implemented method determining a listing of hosts on a network to perform a parallel application, said method comprising:

determining a listing of all possible hosts on said network for performing said parallel application;

determining, for each of said possible hosts, a current capacity and a current utilization;

calculating, for each of said possible hosts, a difference between said current capacity and said current utilization; and

selecting from said listing of all possible hosts a listing of hosts based on sorting said calculated differences.

2. (Original claim) The method of claim 1, wherein said determination of a listing of processors is itself a parallel processing application.

3. (Original claim) The method of claim 1, wherein said determination of a listing of processors is executed in real time concurrently with said parallel application.

4. (Original claim) The method of claim 1, further comprising:

providing said selected listing of hosts to an operating system controlling an execution of said parallel application.

5. (Original claim) The method of claim 1, wherein said selecting a listing of hosts from said listing of all possible hosts further comprises a quantification of a history of each said possible host and a consideration of said history in said selecting of a listing.

6. (Original claim) The method of claim 1, wherein said calculating a difference between current capacity and a current utilization further comprises:

normalizing said difference.

7. (Previously presented) A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to determine a listing of hosts on a network to perform a parallel application, said machine-readable instructions comprising:

determining a listing of all possible hosts on said network for performing said parallel application;

determining, for each of said possible hosts, a current capacity and a current utilization;

calculating, for each of said possible hosts, a difference between said current capacity and said current utilization; and

selecting from said listing of all possible hosts a listing of hosts based on sorting said calculated differences.

8. (Original claim) The signal-bearing medium of claim 7, wherein said machine-readable instructions are provided to an operating system on said network such that said determination of a listing of processors is itself a parallel processing application.

9. (Original claim) The signal-bearing medium of claim 7, wherein said machine-readable instructions are provided to an operating system on said network such that said determination of a listing of processors is executed in real time concurrently with said parallel application.

10. (Original claim) The signal-bearing medium of claim 7, said machine-readable instructions further comprising:

providing said selected listing of hosts to an operating system controlling an execution of said parallel application.

11. (Original claim) The signal-bearing medium of claim 7, wherein said selecting a listing of hosts from said listing of all possible hosts further comprises a quantification of a history of each said possible host and a consideration of said history in said selecting of a listing.



12. (Original claim) The signal-bearing medium of claim 7, wherein said calculating a difference between current capacity and a current utilization further comprises:

normalizing said difference.

13. (Previously presented) A computer network having a plurality of computation resources and an operating system for executing a target parallel application process using at least a subset of said plurality of computation resources, wherein said network includes a method to determine a listing of said computation resources to perform said target parallel application process, said method comprising:

determining a listing of all possible said computation resources on said network for performing said parallel application;

determining, for each of said possible computation resources, a current capacity and a current utilization;

calculating, for each of said possible computation resources, a difference between said current capacity and said current utilization; and

selecting from said listing of all possible computation resources a listing of computation resources based on sorting said calculated differences as said at least a subset of said plurality of computation resources to execute said target parallel application process.

14. (Original claim) The computer network of claim 13, wherein said method interfaces to an operating system on said network such that said determination of a listing of computation resources is itself a parallel processing application.

15. (Original claim) The computer network of claim 13, wherein said method interfaces to an operating system on said network such that said determination of a listing of computation resources is executed in real time concurrently with said parallel application.

16. (Original claim) The computer network of claim 13, said method further comprising:  
providing said selected listing of computation resources to an operating system  
controlling an execution of said parallel application.

17. (Original claim) The computer network of claim 13, wherein said selecting a listing of computation resources from said listing of all possible computation resources further comprises a quantification of a history of each said possible computation resource and a consideration of said history in said selecting of a listing.

18. (Original claim) The computer network of claim 13, wherein said calculating a difference between current capacity and a current utilization further comprises:  
normalizing said difference.

19. (Previously presented) A computer network having a plurality of computation resources and an operating system for executing a target parallel application process using at least a subset of said plurality of computation resources, wherein said network includes a method to determine a listing of said computation resources to perform said target parallel application process, said method comprising:

means for determining a listing of all possible said computation resources on said network for performing said parallel application;

means for determining, for each of said possible computation resources, a current capacity and a current utilization;

means for calculating, for each of said possible computation resources, a difference between said current capacity and said current utilization; and

means for selecting from said listing of all possible computation resources a listing of computation resources based on sorting said calculated differences to be said at least a subset of said computation resources for executing said target parallel application process.

20. (Original claim) The computer network of claim 19, wherein said method interfaces to an operating system on said network such that said determination of a listing of computation resources is executed in real time concurrently with said parallel application.

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**IX. EVIDENCE APPENDIX**

**(NONE)**

**X. RELATED PROCEEDINGS APPENDIX**

**(NONE)**